

# PATENT SPECIFICATION

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## (54) QUICK RELEASE CARPET TILES

(71) We, BIGELOW-SANFORD, INC., a Corporation organized under the laws of the State of Delaware, United States of America, of 140 Madison Avenue, New York, New York 10016, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to carpet tiles and is particularly concerned with an arrangement to facilitate detachment and re-attachment of a carpet tile.

It is known in the prior art to provide carpet material that can be used in a carpet tile intended for installation by the ultimate consumer. Such carpet tile is usually made in the form of rectangles, and preferably as 9 inch, 12 inch or 18 inch squares. Other shapes or configurations are also suitable. These tiles provide for an easy installation of a textile floor, and it is desired that such tiles be easily changed, particularly if they are placed where there is considerable wear due to traffic or damage due to drink or food.

The consumer can easily apply the original tiles which may be of the same color or mixed so as to match tiles of different colors or patterns. Carpet tiles of this type can have a regular carpet pile on their face or they can have a flat non-woven face, and they range from plain needlepunched surfaces to both high quality and low quality shag styled carpets, plush carpets, printed needlepunched tiles, flocked tiles and level loop pile and tight gauge commercial fabrics. In most instances the carpet tile has a latex or polyvinyl chloride foam material attached to its back, although the carpet tile can be attained directly to the floor.

In the prior art the most commonly used installation involved a double-faced tape which would be already attached to the tile and covered with a release paper. The removal of the release paper would allow the carpet tile to be installed, but there were

problems in that the tape may have too little adhesive, or when an attempt is made to remove the tile, the foam back would tear away from the tile and remain attached to the floor. A recent development is to use a hot-melt resin to provide a "lift-and-stick" characteristic. A hot-melt resin adhesive accelerates installation and is of the type that achieves a solid state and resulting strength by cooling. However, the same problems can arise when using the hot-melt resin as arise when using the double-faced tape since the tiles are usually directly adhered to the floor.

The present invention provides a carpet tile comprising a layer of carpet material having top and bottom surfaces, a washable back coating layer impermeable to water and adhered to said bottom surface, fastening material having a quick release characteristic adhered to a lower surface of said back coating, for releasable adherence of said carpet tile to a base surface to which said fastening material is detachably adhered, said base surface being optionally located on an optionally provided base portion.

Fastening material having a quick release characteristic is characterised by being capable of repeated fastening and release. Such material may comprise a quick release adhesive which is of the pressure sensitive "stick and release" type wherein, after adhesion and release, the adhesive retains its pressure sensitive adhesion qualities at least to a substantial degree. A natural latex adhesive is an example of a quick release adhesive useful in this invention. Also useful as a quick release fastening material comprising first and second groups of flock which are quickly attachable by pressing them together and quickly releasable when desired by pulling them apart.

A further provision of the present invention is a method of fastening a carpet tile comprising forming carpet material with top and bottom surfaces and adhering a water impermeable washable back coating layer to said bottom surface, and adhering said

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carpet tile to a base portion by applying a quick release fastening material between said back coating and said base portion.

5 In one embodiment of the present invention a foam of either latex or polyvinyl chloride composition is furnished as a resilient backing. In the prior art where conventional tiles had such foam backing, there was a problem if it was desired to remove the  
10 tile that had been installed as explained hereinabove. In addition, the foam is not considered to be truly washable since it is so water absorbent that drying becomes a problem. Accordingly, it is desirable to have  
15 a carpet tile that would be detachable from the foam backing, and in this one embodiment the carpet material comprising the tile is coated with a washable rubber coating, and a quick release adhesive is adhered to  
20 the backcoating for attachment to a surface of the foam. Such surface generally is of fabric which is impermeable to the release adhesive to prevent the adhesive from penetrating into the foam. The carpet tile can  
25 then be easily removed for washing or can be interchanged with other carpet tile without any difficulty due to the quick release characteristic of the adhesive.

30 Another embodiment of the present invention is to provide washable backcoating to the carpet material and then have the quick release adhesive applied thereto with the carpet tile being directly applied to the floor or a building paper with the same ease  
35 of detachment as explained above.

A further embodiment of the present invention includes the application of a washable coating to the back of the carpet material and the application of flock to the back-  
40 coating material of the tile. Flock is also applied to a fabric that is adhered to the base portion such as the floor, and the two flock groups are pushed together for attachment. The carpet tile is then removed by  
45 lifting as the flock groups are easily separable.

A further embodiment of the present invention wherein the carpet material has a washable backcoating involves the further  
50 application of a secondary backing to the backcoating. A first flock group can then be applied to the secondary backing and another flock group applied to a base portion. Installation as above is accomplished by  
55 pressing the flock groups together, and easy detachment is provided by lifting the carpet tile to separate the flock groups.

The nature of the present invention will become more clearly apparent and better understood from the following description and accompanying drawings in which:

60 Fig. 1 is a side elevational view in vertical section diagrammatically illustrating the installation of a part of a carpet tile of the present invention;  
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Fig. 2 is a side elevational view similar to Fig. 1 diagrammatically illustrating the removal of the carpet tile from a base portion to which it had been installed;

70 Fig. 3 is a view similar to Fig. 1 diagrammatically illustrating the application of a piece of carpet tile of the present invention directly to a floor;

75 Fig. 4 is a view similar to Fig. 1 diagrammatically illustrating the application of a carpet tile of the present invention directly to a building paper;

80 Fig. 5 is a side elevational view in vertical section diagrammatically illustrating a further embodiment of the present invention utilizing flock for the fastening material;

Fig. 6 is a view similar to Fig. 5 diagrammatically illustrating the separation of the carpet tile from the base portion; and

85 Fig. 7 is a view similar to Fig. 5 illustrating a further embodiment of the present invention when a secondary backing is utilized with the carpet tile.

90 It will be understood that the accompanying drawings are merely diagrammatic illustrations, and that reference should be made to the following description for a more detailed explanation of the structures involved.

95 Fig. 1 illustrates a first embodiment of the present invention wherein a section 10 of the carpet tile comprises carpet backing 12 having an upper surface 14 and a lower surface 16. The embodiment shown is a tufted shag carpet having yarns 15 with shag ends 17 extending above the upper surface 14  
100 and connecting portions 18 which are drawn tightly against lower surface 16. A backcoating 22 is applied to cover the connecting yarn portions 18 and the lower surface 16 of the carpet backing 12. The particular  
105 backcoating of the invention is a washable latex composition, which is impermeable to water, and an important feature of the Fig. 1 embodiment is that the carpet tile 10 comprising the backing 12, yarns 15 and  
110 backcoating 22 is easily removable from a base portion.

The base portion illustrated in Fig. 1 is a foam layer 24 that could be attached to a floor. Layer 24 has a fabric covering 26  
115 forming its top surface. Foam layer 24 can be formed from latex or polyvinyl chloride, and remains in place, such as by being attached to the floor, when the carpet tile is removed. This removability feature is  
120 accomplished by providing a quick release adhesive 28 which is applied in a layer or gobs to the tile for application. Adhesive 28 is the type of adhesive known as a "stick and release" adhesive and can be a quick release  
125 pressure sensitive natural latex adhesive.

For the installation the carpet tile having the washable backcoating has applied thereto the gobs of adhesive 28, and the carpet tile is pressed onto a base portion which is  
130

shown in Fig. 1 as the fabric coated foam 24 that could be applied to a floor. When it is desired to remove the carpet tile, either for washing or for replacement, it is easily lifted upwardly due to the quick release characteristics of adhesive 28. Either a new carpet tile is applied or the cleaned or washed tile is re-installed. The removal of tile 10 is shown in Fig 2 where it is seen that layer 28 of adhesive remains adhered to tile 10. The adhesion qualities of adhesive 28 may be found to deteriorate after repeated fastening and release, which may necessitate the application of a new layer or gobs of adhesive 28. For purposes of illustration adhesive 28 is shown in thickened form, but it is to be understood that adhesive 28 is a thin film, and the application of a new layer of adhesive to carpet tile 10 would be made without imparting any additional thickness to the composite tile and base portion upon re-installation.

Another embodiment of the invention is shown in Fig. 3 where the carpet tile 10 is the same as in Fig. 1, but the tile is directly applied to a floor 30 constituting the base portion. The same procedure would be followed in the application of tile 10 to floor 30 in that adhesive 28 would be applied to the back coating 22, and the application would be made by pressure. Quick release would be provided as explained above in connection with Figs. 1 and 2, and the installation of a replacement tile or the re-installing of a cleaned or washed tile 10 would be provided by applying a new layer of adhesive.

A further embodiment of the invention is shown in Fig. 4 where a carpet tile 10 is the same as in Fig. 1 and can be applied over a building paper 32. The same procedure would be followed as described in Figs. 1 to 3 in that adhesive 28 would be applied to the bottom of back coating 22 which is adhered to backing 12, and tile 10 is applied by pressure onto building paper 32 for installation. When it is desired to remove tile 10, the quick release characteristic of adhesive 28 allows the easy lifting off of tile 10 for the cleaning or replacement and re-installing as described hereinabove.

A further embodiment of the invention is illustrated in Figs. 5 and 6 where the fastening means providing the quick release constitute flock. In the embodiment of Fig. 5 a piece of carpet tile 40 is shown comprising carpet material 42 which may be natural or synthetic material which is needlepunched so that vertically displaced fibres 44 extend between upper surface 48 and lower surface 50 of material 42. A washable backcoating 52 of latex is applied to material 42 and thereby covers not only lower surface 50 but also the ends 54 of vertically displaced fibers 44 that extend through lower surface

50. A first group of flock 56 is adhered to the backcoating 52. Such flock 56 can be applied while latex backcoating 52 is in liquid form.

The base portion to which tile 40 is applied is illustrated in Fig. 5 as a floor 58 having an upper fabric layer 60 to which a second group of flock 62 is applied. The separate flock groups are most clearly shown in Fig. 6 where the ease of separability of tile 40 from base portion 58 is illustrated.

For installation tile 40 is formed with first flock group 56 in backcoating 52. Second flock group 62 is formed in the base portion which includes floor 58 and fabric layer 60. The installation of the tile 40 is provided by pushing the tile downward to intermesh and engage the two groups of flock. When it is desired to remove tile 40, it is lifted upwardly to easily pull apart the two groups of flock, and after the tile is cleaned or a new tile provided, it is easily replaced by pressing it downwardly to again engage the groups of flock.

A further embodiment of the invention is shown in Fig. 7 where a piece of carpet tile 70 comprises carpet material 72 having an upper surface 74 and a lower surface 76. Material 72 is needlepunched so that vertically displaced fibers 78 extend between upper surface 74 and lower surface 76 of material 72. A washable backcoating 84 of latex is applied to the lower surface 76 to cover this lower surface and the ends 82 of vertically displaced fibers 78 that extend through lower surface 76. The difference in the embodiment of Fig. 7 as compared to the embodiment of Fig. 5 is that a secondary backing 86 is adhered to the backcoating 84, and a first group of flock 88 is applied to secondary backing 86. It may be necessary to apply a flock adhesive to secondary backing 86 in order to complete the application of flock 88.

The base portion shown in Fig 7 comprises floor 90 having a fabric layer 92 to which the second group of flock is applied as explained above in connection with the Fig. 5 embodiment. The installation and removal of tile 70 is the same as explained above in connection with Fig. 5 in that the installation is made by pressing down to join the two groups of flock together, and the removing is easily accomplished by lifting up tile 70 to separate the flock groups.

The above description has illustrated a carpet tile in which a layer of carpet material includes a top and bottom surface having a water impermeable washable backcoating layer adhered to the bottom surface and a quick release fastening material adhered to the lower surface of the backcoating. The backcoating and fastening material can have a latex composition or the fastening material may include flock. There has also

been illustrated a carpet tile in which a layer of carpet material having top and bottom surfaces has a water impermeable washable backcoating layer applied to the bottom surface with a quick release fastening material adhered to the backcoating that is detachably applied to a surface of a base portion. The base portion may be foam or a building paper or a floor which may include a fabric layer, and a further embodiment of the invention comprises flock groups applied respectively on the tile and on the base portion for interengagement for the easy attachment and easy removability feature of the invention.

A further feature of the present invention is a method of fastening a carpet tile wherein carpet material having top and bottom surfaces with a water impermeable washable back coating layer adhered to the bottom surface is adhered to a base portion by the application of a quick release fastening material therebetween. The fastening material may be latex adhesive or flock.

It will be understood that various changes and modifications may be made by those skilled in the art with reference to the particular embodiment of carpet tile and method of fastening described above without departing from the scope of the invention as defined by the following claims.

#### WHAT WE CLAIM IS:—

1. A carpet tile comprising a layer of carpet material having top and bottom surfaces, a washable back coating layer impermeable to water and adhered to said bottom surface, fastening material having a quick release characteristic adhered to a lower surface of said back coating, for releasable adherence of said carpet tile to a base surface to which said fastening material is detachably adhered, said base surface being optionally located on an optionally provided base portion.

2. A carpet tile according to Claim 1 in which said back coating layer comprises latex.

3. A carpet tile according to Claim 1 or Claim 2, wherein said fastening material comprises a quick release pressure sensitive natural latex adhesive.

4. A carpet tile according to any one of Claims 1 to 3, wherein said base portion surface comprises a fabric layer.

5. A carpet tile according to any one of the preceding claims in which said base portion comprises polyvinyl chloride foam.

6. A carpet tile according to any one of Claims 1 to 4, in which said base portion comprises latex foam.

7. A carpet tile according to Claim 1, in which said fastening material includes a first group of flock, said base portion includes a second group of flock, and said first and second flock groups are quickly attachable together and quickly releasable when desired.

8. A carpet tile according to Claim 5, in which said fastening material includes a secondary backing layer, said first flock group being applied to said secondary backing layer, and said base portion has a fabric layer adhered to its upper surface, said second flock group being applied to said fabric layer.

9. A carpet tile according to any one of Claims 1 to 4, 7 and 8 in which said base portion is a floor.

10. A carpet tile according to any one of Claims 1 to 3, in which said base portion is a paper layer.

11. A method of fastening a carpet tile comprising forming carpet material with top and bottom surfaces and adhering a water impermeable washable back coating layer to said bottom surface, and adhering said carpet tile to a base portion by applying a quick release fastening material between said back coating and said base portion.

12. A carpet tile substantially as hereinbefore described with reference to Figures 1 and 2, Figure 3, Figure 4, Figures 5 and 6 or Figure 7 of the accompanying drawings.

14. Method of fastening a carpet tile substantially as hereinbefore described with reference to the accompanying drawings.

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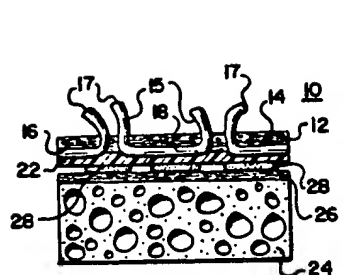


FIG. 1

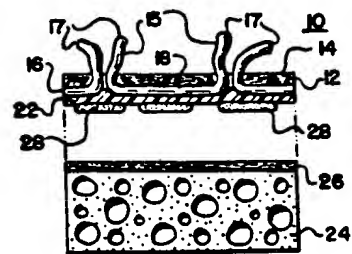


FIG. 2

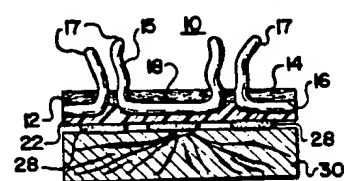


FIG. 3

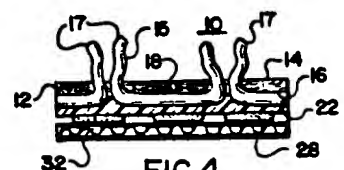


FIG. 4

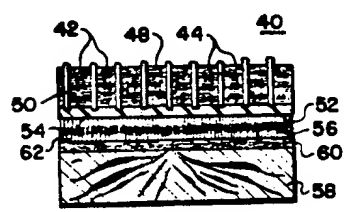


FIG. 5

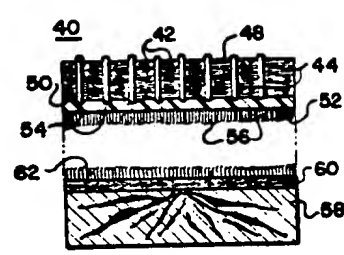


FIG. 6

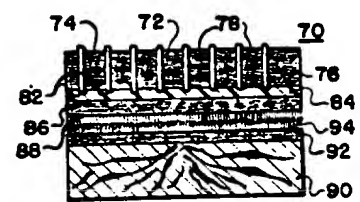


FIG. 7

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